

## Amendments under Article 34

## C L A I M S (Amended)

- 5           1. (Amended) A mobile communication system which  
comprises a radio network controller and a radio base station  
connected to said radio network controller and which provides  
a mobile communication service to a mobile terminal  
connectable to said radio base station, wherein
- 10           said radio base station is installed within a private  
network,
- a relay node installed in the private network relays  
mobile communication traffic transmitted on said private  
network between said radio network controller and said radio
- 15           base station, and
- when said mobile terminal makes or receives a call, said  
relay node performs reception determination processing in  
cooperation with a bandwidth management mechanism for managing  
the entire private network and provides a communication line
- 20           to said mobile terminal when permitting the reception.
2. The mobile communication system according to claim 1,  
wherein said relay node receives a bandwidth control signaling  
that said radio network controller transmits to said radio  
base station when said mobile terminal makes or receives a
- 25           call to thereby start the reception determination processing.
3. The mobile communication system according to claim 1,  
wherein said relay node is a VPN gateway.
4. A mobile communication system which comprises a radio  
network controller and a radio base station connected to said

radio network controller and which provides a mobile communication service to a mobile terminal connectable to said radio base station, wherein

5       said radio base station is installed within a private network,

          a relay node installed in said private network relays mobile communication traffic transmitted on said private network between said radio network controller and said radio base station,

10       first and second encryption keys are used, respectively, between said radio network controller and relay node and between said radio base station and relay node to perform encrypted communication, and

          a pre-shared key needed to generate said second  
15       encryption key is dynamically generated by a key exchange mechanism between said radio network controller and radio base station, said generated pre-shared key being notified from said radio network controller to said relay node.

          5. (Amended) A mobile communication system which  
20       comprises a radio network controller and a radio base station connected to said radio network controller and which provides a mobile communication service to a mobile terminal connectable to said radio base station, wherein

          said radio base station is installed within a private  
25       network,

          mobile communication traffic between a relay node which is connected to said radio base station via said private network and said radio base station is transmitted on the private network,

said relay node relays the mobile communication traffic transmitted on said private network between said radio network controller and said radio base station,

5       said private network is operated using a different IP address system from that used between said radio network controller and said relay node,

10       first and second encryption keys are used, respectively, between said radio network controller and relay node and between said radio base station and relay node to perform encrypted communication, and

15       said second encryption key is dynamically generated by a key exchange mechanism between said radio network controller and said radio base station, the generated second encryption key being notified from said radio network controller to said relay node.

6. The mobile communication system according to claim 4, wherein

20       said radio network controller comprises means for dynamically generating said pre-shared key by using a key exchange mechanism between itself and said radio base station, and means for notifying said relay node of said generated pre-shared key.

7. The mobile communication system according to claim 5, wherein

25       said radio network controller comprises means for dynamically generating said second encryption key by using a key exchange mechanism between itself and said radio base station, and means for notifying said relay node of said generated second encryption key.

8. (Amended) A relay node which relays mobile communication traffic between a radio base station and a radio network controller, wherein

5       said relay node is installed in a private network in which said radio base station is installed and relays mobile communication traffic transmitted on said private network between said radio network controller and said radio base station,

      said relay node comprising:

10       means for receiving a bandwidth control signaling that said radio network controller transmits to said radio base station;

      means for extracting traffic information comprised in the bandwidth control signaling;

15       means for performing reception determination in cooperation with a bandwidth management mechanism for managing the entire private network; and

      means for transmitting the bandwidth control signaling including a result of the reception determination and  
20       bandwidth control information whose reception has been permitted.

9. A relay node which relays mobile communication traffic between a radio base station and a radio network controller, wherein

25       said relay node is installed in a private network in which said radio base station is installed and relays mobile communication traffic transmitted on said private network between said radio network controller and said radio base station, and

said relay node is connected to said radio base station and radio network controller and performs encrypted communication with said radio network controller by using a first encryption key and with said radio base station by using  
5 a second encryption key,

said relay node comprising:

means for receiving a pre-shared key for generating the second encryption key from said radio network controller;

means for dynamically generating said second encryption  
10 key between itself and said radio base station by using said pre-shared key; and

means for encrypting the mobile communication traffic by using said second encryption key.

10. (Amended) A relay node which relays mobile  
15 communication traffic between a radio base station and a radio network controller, wherein

said relay node is installed in a private network in which said radio base station is installed and relays mobile communication traffic transmitted on said private network  
20 between said radio network controller and said radio base station, and

said relay node is connected to said radio base station and radio network controller and performs encrypted communication with said radio network controller by using a  
25 first encryption key and with said radio base station by using a second encryption key,

said relay node comprising:

means for receiving said second encryption key from said radio network controller; and

means for encrypting the mobile communication traffic  
using said second encryption key,

said private network being operated by using a different  
IP address system from that used between said radio network  
5 controller and said relay node.

11. A radio network controller connected to a plurality  
of radio base stations via a relay node which performs  
encrypted communication with said radio base stations by using  
different encryption keys, said radio network controller  
10 comprising:

means for dynamically generating a pre-shared key needed  
to generate said encryption key between itself and said radio  
base station by using a key exchange mechanism; and

means for notifying said relay node of the generated pre-  
15 shared key.

12. (Amended) A radio network controller connected to a  
plurality of radio base stations within a private network via  
a relay node which performs encrypted communication with said  
radio base stations using different encryption keys, said  
20 radio network controller comprising:

means for dynamically generating said encryption key  
between itself and said radio base stations by using a key  
exchange mechanism; and

means for notifying the relay node of the generated  
25 encryption key,

said private network being operated by using a different  
IP address system from that used between said radio network  
controller and said relay node.

13. (Amended) A relay node program allowing a computer

serving as a relay node which relays mobile communication traffic between a radio base station and radio network controller to execute a function of relaying mobile communication traffic transmitted on a private network between  
5 the radio network controller and radio base station, said computer serving as a relay node and radio base station being installed within said private network,

said program further allowing the computer to execute functions of: receiving a bandwidth control signaling that  
10 said radio network controller transmits to said radio base station: extracting traffic information comprised in the bandwidth control signaling; performing reception determination in cooperation with a bandwidth management mechanism for managing the entire private network; and  
15 transmitting the bandwidth control signaling including a result of the reception determination and bandwidth control information whose reception has been permitted.

14. A relay node program allowing a computer serving as a relay node which relays mobile communication traffic between a  
20 radio base station and radio network controller to execute a function of relaying mobile communication traffic transmitted on a private network between said radio network controller and radio base station, and to perform encrypted communication with said radio network controller by using a first encryption  
25 key and with said radio base station by using a second encryption key, said computer serving as a relay node and radio base station being installed within said private network,

said program further allowing the computer to execute functions of: receiving a pre-shared key for generating said

second encryption key from said radio network controller;  
dynamically generating said second encryption key between  
itself and said radio base station by using said pre-shared  
key; and encrypting the mobile communication traffic by using  
5 said second encryption key.

15. (Amended) A relay node program allowing a computer  
serving as a relay node, said computer being used in a mobile  
communication system which comprises said relay node for  
relaying mobile communication traffic between a radio base  
10 station and a radio network controller, in which said radio  
base station is installed in a private network, and in which  
said private network is operated by using a different IP  
address system from that used between said radio network  
controller and relay node, to execute a function of relaying  
15 mobile communication traffic transmitted on the private  
network between the radio network controller and radio base  
station, and to perform encrypted communication with said  
radio network controller by using a first encryption key and  
with said radio base station by using a second encryption key,  
20 said program further allowing said computer to execute  
functions of: receiving said second encryption key from said  
radio network controller; and encrypting the mobile  
communication traffic by using said second encryption key.

16. A radio network controller program allowing a  
25 computer serving as a radio network controller connected to a  
plurality of radio base stations via a relay node which  
performs encrypted communication with said radio base stations  
by using different encryption keys to execute functions of:  
dynamically generating a pre-shared key needed to generate



said encryption key between itself and said radio base station by using a key exchange mechanism; and notifying said relay node of the generated pre-shared key.

17. (Amended) A radio network controller program allowing  
5 a computer serving as a radio network controller, said computer being used in a mobile communication system which comprises said radio network controller connected to a plurality of radio base stations via a relay node which performs encrypted communication with said radio base stations  
10 installed in a private network by using different encryption keys and in which the private network is operated by using a different IP address system from that used between said radio network controller and relay node, to execute functions of:

dynamically generating said encryption key between itself  
15 and said radio base station by using a key exchange mechanism; and notifying said relay node of the generated encryption key.

18. (Amended) A mobile communication method for use in a mobile communication system which comprises a radio network controller and a radio base station connected to said radio  
20 network controller and which provides a mobile communication service to a mobile terminal connectable to said radio base station, wherein

said radio base station and relay node are installed within a private network comprised in said mobile  
25 communication system,

said relay node relays mobile communication traffic transmitted on said private network between said radio network controller and radio base station, and

when said mobile terminal makes or receives a call, said

relay node performs reception determination processing in cooperation with a bandwidth management mechanism for managing the entire private network and provides a communication line to said mobile terminal when permitting the reception.

5        19. A mobile communication method for use in a mobile communication system which comprises a radio network controller and a radio base station connected to said radio network controller and which provides a mobile communication service to a mobile terminal connectable to said radio base  
10       station, wherein

      said radio base station and relay node are installed within a private network comprised in said mobile communication system,

      a relay node relays mobile communication traffic  
15       transmitted on said private network between said radio network controller and radio base station,

      first and second encryption keys are used, respectively, between said radio network controller and relay node and between said radio base station and relay node to perform  
20       encrypted communication, and

      a pre-shared key needed to generate said second encryption key is generated by a key exchange mechanism between said radio network controller and radio base station, the generated pre-shared key being notified from said radio  
25       network controller to said relay node.

      20. (Amended) A mobile communication method for use in a mobile communication system which comprises a radio network controller and a radio base station connected to said radio network controller and which provides a mobile communication

service to a mobile terminal connectable to said radio base station, wherein

said radio base station is installed within a private network and is connected to a relay node via said private  
5 network in said mobile communication system,

mobile communication traffic between said relay node and said radio base station is transmitted on said private network,

said relay node relays the mobile communication traffic transmitted on said private network between said radio network  
10 controller and radio base station,

said private network is operated using a different IP address system from that used between said radio network controller and said relay node,

first and second encryption keys are used, respectively,  
15 between said radio network controller and relay node and between said radio base station and relay node to perform encrypted communication, and

said second encryption key is dynamically generated by a key exchange mechanism between said radio network controller  
20 and said radio base station, the generated second encryption key being notified from said radio network controller to said relay node.